CLAIMS

1. A Methods of Digital Content Protection with Digital Rights Expression, comprising the following steps of:

Parsing a digital content description, especially parsing a DID (Digital

5   Item Declaration) in MPEG-21 scope;

Retrieving a digital content identifier (content ID) which is used to identify the said digital content, especially a DII in MPEG-21 scope, or sub content identifier;

Detecting a rights and protection description holder which contains

10   rights and protection information applied to the said digital content with the corresponding content ID, and here the holder called IPMP (Intellectual Property Management and Protection) Control Graph Holder or REL (Rights Expression Language)-IPMP Control Graph holder;

Retrieving a flag from the said holder which indicates if the said content

15   is protected or belongs to free content;

Processing the description information carried in the said IPMP Control Graph or REL-IPMP Control Graph;

Checking if rights descriptions or other metadata description is digital signed by retrieving a flag which is attached to the said rights or other

20   metadata; and if it is signed, preparing the corresponding digital signing tool which is indicated by ToolID;

Retrieving a key license from a protected License Manager;

Checking the integrity of the said rights or metadata using the said digital signing tool;

25   Parsing the said rights with their conditions following the rules which is pre-defined, especially following REL rules which is defined in MPEG-21 scope, and storing the said entitled rights and conditions in a buffer for future

checking;

Checking if the said content is encrypted by retrieving a flag which is attached to the said content; and if it is encrypted, preparing the corresponding encryption tool which is indicated by ToolID;

5   Un-protecting the said encrypted content using the said encryption tool with the said ToolID, and other information;

Checking if the said content is watermarked by retrieving a flag which is attached to the said content; and if it is watermarked, preparing the corresponding watermarking tool which is indicated by ToolID for further

10   action;

Processing user's request against the said entitled rights and conditions stored in the buffer;

Exercising the rights requested by the said user if it is entitled, and

Acting on the said un-protected content for playing, rendering,

15   recording, modifying, deleting, adapting, etc.

2. A Methods of Digital Content Protection with Digital Rights Expression, whereas Un-protecting the said encrypted content using the said encryption tool with the said ToolID, and other information

20   in claim 1, further comprising the following steps of:

Retrieving the key information from KeyData holder in the said IPMP Control Graph or REL-IPMP Control Graph directly or the location pointed by a pointer which is placed in IPMP Control Graph or REL-IPMP Control Graph, and

25   Retrieving a key license from a protected License Manager.

3. The Methods of Digital Content Protection with Digital Rights Expression, whereas Retrieving a key license from a protected License Manager in claim 2, further comprising the following steps of:

5 Protecting the said Licence Manager using Temper Resistant approach, and

Protecting the buffer which is used to store the said retrieved and generated key license, and the said buffer could be Temper Resistant protected.

10

4. The Methods of Digital Content Protection with Digital Rights Expression, whereas Parsing the said rights with their conditions following the rules which is pre-defined, especially following REL rules which is defined in MPEG-21 scope, and storing the said

15 entitled rights and conditions in a buffer for future checking in claim 1, further comprising the following steps of:

Protecting the said Rights Parser or part of the said Rights Parser using Temper Resistant approach or other approach, and

Protecting the said buffer using Temper Resistant approach or other

20 approaches.

5. The Methods of Digital Content Protection with Digital Rights Expression, whereas Checking if rights descriptions or other metadata description is digital signed by retrieving a flag which is

25 attached to the said rights or other metadata; and if it is signed, preparing the corresponding digital signing tool which is indicated by ToolID in claim 1, here the other metadata description could be DIA

(Digital Item Adaptation) in MPEG-21 scope, or other types of metadata, which could be protected and the protection description information is placed in the said IPMP Control Graph or REL-IPMP Control Graph.

6. The Methods of Digital Content Protection with Digital Rights Expression whereas in claim 1 encryption and decryption could be done using a defined tool as default with a defined ToolID in certain application domain, digital signing could be done using a defined tool as default with a defined ToolID in certain application domain, and other protection such as watermarking could be done by defining an interface or API to achieve flexibility.

7. The Methods of Digital Content Protection with Digital Rights Expression whereas in claim 1 the operation of un-protecting a content could be done in DIP (Digital Item Processing) Engine as defined in DIME (Digital Item Method Engine), or DIBO (Digital Item Base Operation), or DIXO (Digital Item eXtended Operation).

8. The Methods of Digital Content Protection with Digital Rights Expression whereas in claim 1 the said REL-IPMP Control Graph means to extend the existing REL of MPEG-21 or other rights expression language to contain protection description information, where IPMPX is defined as the flag used to represent the extension part of protection from the existing REL.